



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,289	11/10/2001	Kenneth Gerard Glogovsky		4958

7590 08/05/2004
JOSEPH A PUGH
2300 NE BROOKWOOD PARKWAY
HILLSBORO, OR 97124

EXAMINER

LIN, TINA M

ART UNIT PAPER NUMBER

2874

DATE MAILED: 08/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/007,289

Applicant(s)

GLOGOVSKY ET AL.

Examiner

Tina M Lin

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 8-17 and 19 is/are rejected.
- 7) ☒ Claim(s) 5, 7 and 18 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

The disclosure is objected to because of the following informalities: On page 3 line 27 of the specification, "a single substrate" is marked as reference numeral 33. This appears to be a typographical error. It appears that the substrate should be marked as reference numeral 34. Appropriate correction is required.

Claim 6 is objected to because of the following informalities: In claim 6, the word "muli" appears to be a typographical error. It appears the word should be spelled "multi". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 3, 4, 10, 12, 13, 15, 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,001,522 to Takahashi et al. Takahashi et al. discloses an opto-electric device with at least two spatially separated components formed on a single substrate (20), where each optical component includes an active region with multi-quantum well layers (22) with a passive area inbetween the active components. But Takahashi et al. fails to disclose a passive waveguide to be formed inbetween and butt coupling the two components. However, Takahashi et al. does disclose a gap between the laser and modulation active parts. Furthermore, from Figure 2, the arrow indicates the transfer of light from one active region to the other. By the broadest definition, a waveguide is a means of transferring light from one median to the other.

Art Unit: 2874

Therefore, the gap inbetween the two active regions operates as a median for carrying light and coupling the two active regions together. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have used the gap between the active components as a median to guide light.

In regards to claims 3, 4 and 19, Takahashi et al. discloses all discussed above but fails to disclose at least three optical components, such as a laser, modulator and an optical amplifier. However, in Figure 2, Takahashi et al. shows a laser part and a modulation part. Additionally, an amplifier by its broadest definition is a laser (light amplification stimulated emission of radiation). Although Takahashi et al. does not specifically disclose three active components, Takahashi et al. does disclose that more than one active component may be on the substrate. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have placed an additional amplifier component on the substrate.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,001,522 to Takahashi et al. as applied to claim1 above, and further in view of U.S. Patent Application 2004/0096175 to Tolstikhin. Takahashi et al. discloses all discussed above, but fails to mention the multi-quantum layer to comprise InGaAsP. However, Tolstikhin discloses a semiconductor device with active regions on the substrate with an active multi-quantum layer comprising the material InGaAsP. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have used a multi-quantum layer with the material InGaAsP.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,001,522 to Takahashi et al. as applied to claim1 above, and further in view of U.S.

Art Unit: 2874

Patent 6,158,901 to Kovacic. Takahashi et al. discloses all discussed above but fails to disclose a stop etch layer formed over the substrate. However, Kovacic discloses a similar semiconductor device with a substrate with a modulator and passive waveguides formed over the substrate with an additional stop-etch layer for the purpose of aiding the alignment and coupling of optical signals and elements. Therefore, in order to also aid in the alignment and coupling of optical signals and elements, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have added an additional stop etch layer.

Claims 9, 14 and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,001,522 to Takahashi et al. and U.S. Patent 6,158,901 to Kovacic, as applied to claims 1 and 12 above, and further in view of U.S. Patent 5,309,003 to Luryi. Takahashi et al. and Kovacic discloses all discussed above but fails to disclose the stop etch layer to comprise either InAlAs or GaInAlAs. However, Luryi et al. discloses as a general teaching that stop etch layers in semiconductor devices can be made InAlAs or InGaAs. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have used either material for the stop etch layer.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,001,522 to Takahashi et al. and U.S. Patent 6,158,901 to Kovacic, as applied to claim 1 above, and further in view of U.S. Patent 5,309,003 to Luryi. Takahashi et al. discloses an opto-electric device with at least two spatially separated components formed on a single substrate (20), where each optical component includes an active region with multi-quantum well layers (22) with a passive area inbetween the active components. But Takahashi et al. fails to disclose a passive waveguide to be formed inbetween and

Art Unit: 2874

butt coupling the two components. However, Takahashi et al. does disclose a gap between the laser and modulation active parts. Furthermore, from Figure 2, the arrow indicates the transfer of light from one active region to the other. By the broadest definition, a waveguide is a means of transferring light from one median to the other. Therefore, the gap inbetween the two active regions operates as a median for carrying light and coupling the two active regions together. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have used the gap between the active components as a median to guide light. Takahasi et al. also fails to disclose at least three optical components, such as a laser, modulator and an optical amplifier. However, in Figure 2, Takahashi et al. shows a laser part and a modulation part. Additionally, an amplifier by its broadest definition is a laser (light amplification stimulated emission of radiation). Although Takahashi et al. does not specifically disclose three active components, Takahashi et al. does disclose that more than one active component may be on the substrate. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have placed an additional amplifier component on the substrate. Additionally, Takahashi et al. fails to mention the multi-quantum layer to comprise InGaAsP. However, Tolstikhin discloses a semiconductor device with active regions on the substrate with an active multi-quantum layer comprising the material InGaAsP. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have used a multi-quantum layer with the material InGaAsP. Also, Takahashi et al. fails to disclose a stop etch layer formed over the substrate. However, Kovacic discloses a similar semiconductor device with a substrate with a modulator and passive waveguides

Art Unit: 2874

formed over the substrate with an additional stop-etch layer for the purpose of aiding the alignment and coupling of optical signals and elements. Therefore, in order to also aid in the alignment and coupling of optical signals and elements, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have added an additional stop etch layer. Furthermore, Takahashi et al. and Kovacic discloses all discussed above but fails to disclose the stop etch layer to comprise either InAlAs or GaInAlAs. However, Luryi et al. discloses as a general teaching that stop etch layers in semiconductor devices can be made InAlAs or InGaAs. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have used either material for the stop etch layer.

Allowable Subject Matter

Claims 5, 7, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record fails to disclose or reasonably suggest the passive waveguide to include a cladding on both sides of the active region.

Claim 20 is allowed. The prior art of record in this application fails to disclose or reasonably suggest a method of forming an opto-electric device by forming an etch stop layer with the materials InAlAs or GaInAlAs on the surface of a substrate, separately forming epitaxial layers over the substrate for each laser, modulator and amplifier, where the active layers include multi-quantum layers with InGaAsP, selectively etching the epitaxial layers, sequentially forming a first cladding layer comprising InP, a passive waveguide layer comprising InGaAsP and a second cladding layer comprising InP which

Art Unit: 2874

butt couples the active regions and forming three spatially separate active components, a laser, modulator and an amplifier.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reference E discusses alternative materials for etch stop layers.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

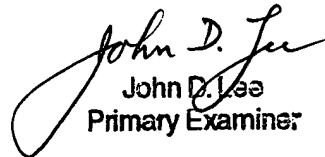
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tina M Lin whose telephone number is (571) 272-2352. The examiner can normally be reached on Monday-Friday 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2874

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


TML


John D. Lee
Primary Examiner